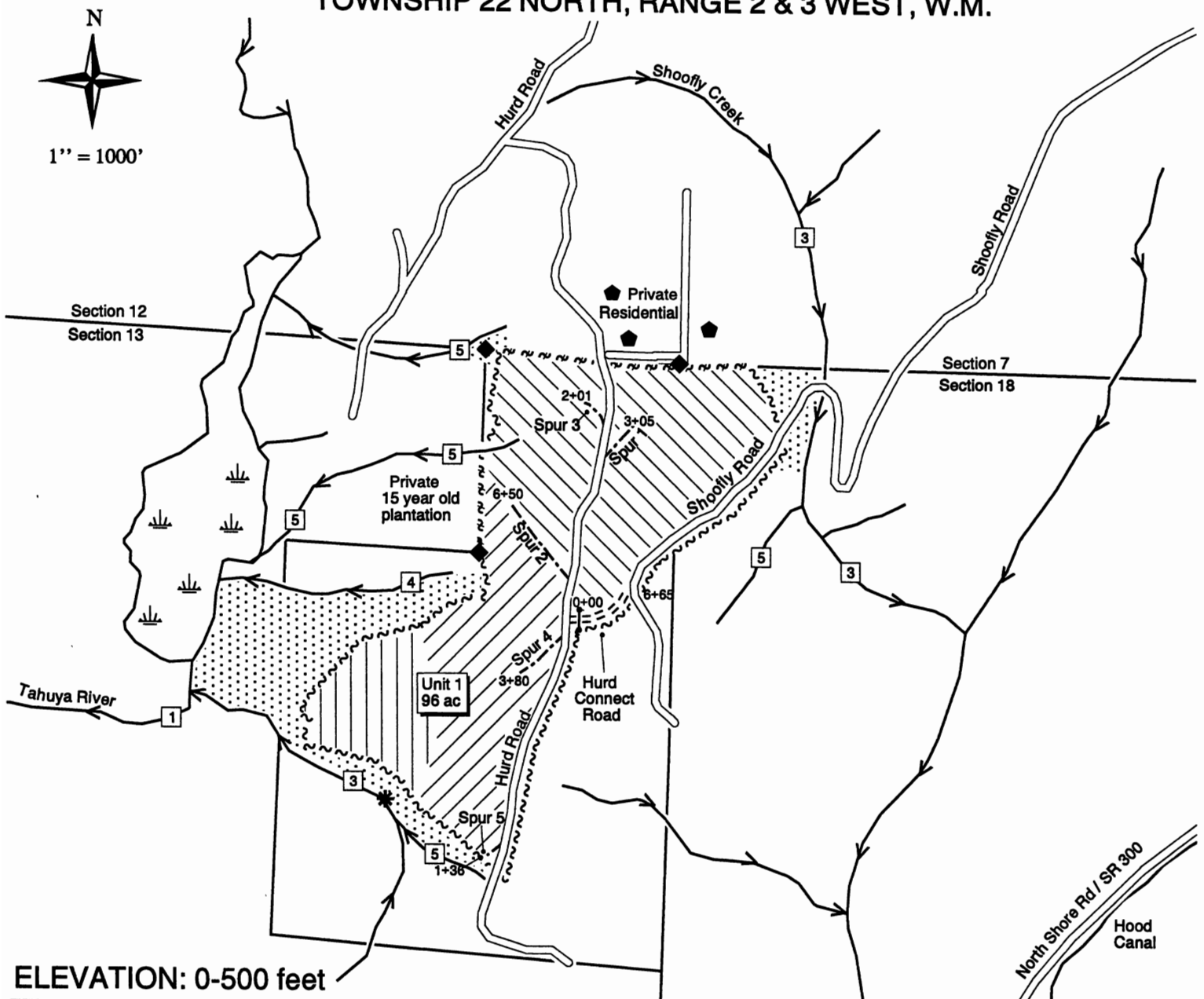


TIMBER SALE MAP

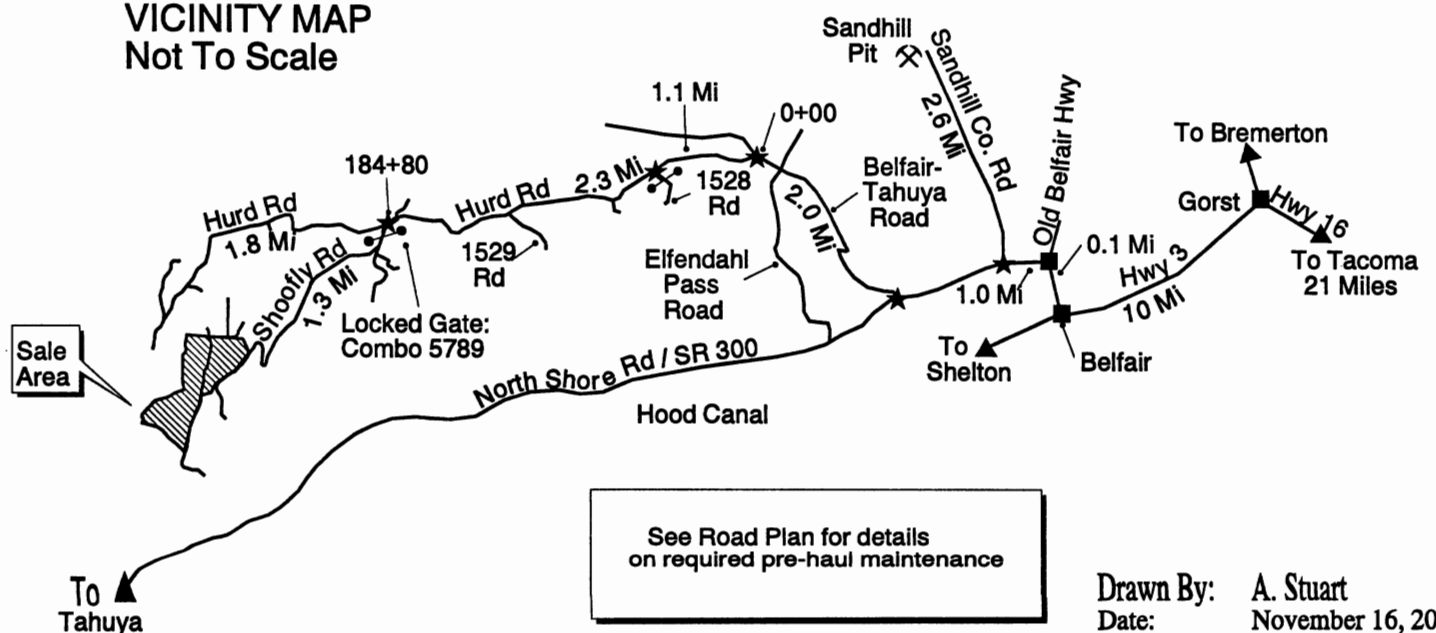
SALE NAME: SHOO
 AGREEMENT NO: 30-075789
 TRUST(S): FOREST BOARD TRANSFER AND C.E.P.& R.I.

REGION: SOUTH PUGET SOUND
 COUNTY(S): MASON

ROAD PLAN PROJECT MAP TOWNSHIP 22 NORTH, RANGE 2 & 3 WEST, W.M.



VICINITY MAP Not To Scale



See Road Plan for details
 on required pre-haul maintenance

Drawn By: A. Stuart
 Date: November 16, 2004

LEGEND

~~~~~	White Timber Sale Boundary Tags		Cable		Survey Monument
ru ru ru ru	Property Line marked with carsonite posts & yellow flagging		Ground Based		Wetlands
=====	Existing Road		Cable/Optional Shovel Area-see H-140 I) in contract		Residence
=====	Required Construction		RMZ		Water Type
-----	Optional Construction				Streams

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES  
SOUTH PUGET SOUND REGION

SHOO  
ROAD PLAN

SECTION 18, TOWNSHIP 22 NORTH, RANGE 02 WEST, W.M.  
SECTION 13, TOWNSHIP 22 NORTH, RANGE 03 WEST, W.M.

MASON COUNTY  
HOOD CANAL DISTRICT

AGREEMENT NO.: 30-075789  
DATE: 10/21/04

STAFF ENGINEER: Heymann  
DRAWN & COMPILED BY: Heymann

SECTION 0 - SCOPE OF PROJECT

This project includes but is not limited to construction and optional construction including:  
clearing;  
grubbing;  
right-of-way debris disposal;  
excavation and/or embankment to subgrade;  
landing construction;  
acquisition and installation of drainage structures;  
acquisition, manufacture, and application of rock;  
grass seeding;  
road abandonment.

This project also includes but is not limited to pre-haul maintenance including:  
grading and shaping existing road surface and turnouts;  
spot rocking.

SECTION 1 - GENERAL CLAUSES

1.1-1 ROAD PLAN SCOPE

Clauses in this plan apply to all construction or pre-haul maintenance including landings unless otherwise noted.

1.1-2 REQUIRED ROADS

Construction or pre-haul maintenance of the following roads is required. All roads shall be constructed or pre-haul maintained on the State's location and in accordance with this Road Plan.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
Hurd Connect	0+00 to 6+65	Construction
Hurd	0+00 to 184+80	Pre-haul Maintenance

1.1-3 OPTIONAL ROADS

Construction of the following roads is not required. Roads used by the Purchaser shall be constructed on the State's location and in accordance with this Road Plan.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
Spur 1	0+00 to 3+05	Construction
Spur 2	0+00 to 6+50	Construction
Spur 3	0+00 to 2+01	Construction
Spur 4	0+00 to 3+80	Construction
Spur 5	0+00 to 1+36	Construction

1.1-4 ROAD PLAN CHANGES

Any departure from this Road Plan including relocation, extension, change in design or additional roads shall be submitted in writing, to the Contract Administrator for consideration, submitted plans must be approved before construction begins.

#### **1.1-5 HIDDEN CONDITIONS**

On this plan quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions or Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to: solid subsurface rock, subsurface springs, saturated ground, and unstable soil.

#### **1.2-1 CONSTRUCTION PERIOD**

The construction, pre-haul maintenance or rock haul on any of the roads specified herein shall not be permitted when in the opinion of the Contract Administrator, excessive damage may occur, nor shall it be permitted from September 30 to May 1 unless authority to do so is granted, in writing, by the Contract Administrator.

#### **1.2-1C DAILY CONSTRUCTION TIME**

Operation of construction equipment will not be permitted from 7:00 PM to 7:00 AM, Monday through Friday. No operation of road construction equipment will be allowed on weekends or State recognized holidays unless authority to do so is granted in writing by the Contract Administrator.

#### **1.2-2 HAUL APPROVAL**

Purchaser shall not use roads constructed or pre-haul maintained under this Road Plan for hauling, other than timber cut on the right-of-way, without written approval from the Contract Administrator.

#### **1.2.1-1 CONSTRUCTION STEPS**

Pioneering shall not extend past construction that will be completed during the current construction season. Drainage shall be provided on all uncompleted construction as approved, in writing, by the Contract Administrator. Road pioneering operations shall not undercut the final cut slope deposit excavated material outside the clearing limits, or restrict drainage.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches, and culvert installations and subgrade compaction shall be completed and are subject to written approval by the Contract Administrator prior to rock application, and/or timber haul.

#### **1.3-1A CLOSURE TO PREVENT ROAD DAMAGE**

At any time of the year, the hauling of forest products shall not be permitted when in the opinion of the Contract Administrator excessive road damage may occur.

#### **1.4-3 R P DAMAGE**

Reference points (R.P.'s) that are moved or damaged at any time during construction shall be reset in their original locations by the Purchaser. Excavation and embankment shall not proceed on road segments controlled by said R.P.'s until all moved or damaged R.P.'s are reset.

#### **1.5-1 ROAD MAINTENANCE RESPONSIBILITY**

Maintenance on roads listed in Contract Clauses C-50 (Purchaser Road Maintenance and Repair) and C-60 (Designated Road Maintainer) shall be performed in accordance with Forest Access Road Maintenance Specifications.

#### **1.5-3 SNOWPLOWING**

Snowplowing shall not be permitted unless authorized, in writing, by the Contract Administrator.

### **SECTION 2 - CLEARING**

#### **2.1-1 CLEARING SPECIFICATION**

Fell all vegetative material larger than 6 inches DBH or over 20 feet high between the marked right-of-way boundaries or if not marked in the field, between clearing limits specified on TYPICAL SECTION SHEET.

### **SECTION 3 - GRUBBING**

#### **3-1 GRUBBING SPECIFICATIONS**

All stumps shall be removed that fall between grubbing limits shown on the TYPICAL SECTION SHEET. Those outside the grubbing limits but with undercut roots shall also be removed.

3-2 GRUBBING LIMITS

Grubbing limits are defined as the entire area between the external limits shown on the TYPICAL SECTION SHEET.

SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

4.1-1 DEBRIS DEFINITION

Right-of-way debris is defined as all nonmerchantable vegetative material larger than one cubic foot in volume ungrubbed within the grubbing limits.

4.1-2 DISPOSAL COMPLETION

All right-of-way debris disposal shall be completed prior to the application of rock and/or timber haul.

4.2.3-3 DEBRIS PLACEMENT

Right-of-way debris shall not be placed against standing timber.

4.2.3-4 SCATTERING RIGHT OF WAY DEBRIS

Right-of-way debris shall be scattered outside the right-of-way clearing limits in natural openings.

SECTION 5 - EXCAVATION

5.1-1 DEFAULT ROAD DIMENSIONS

Unless controlled by specific design sheets herein, Roads shall be constructed in accordance with dimensions shown on the TYPICAL SECTION SHEET.

5.1-3 ROAD GRADE AND ALIGNMENT

Road grade and alignment shall conform to the State's marked location. Grade and alignment shall have smooth continuity without abrupt changes in direction. Maximum grades are: 18 percent favorable and 12 percent adverse or as specified on drawings. Minimum radius curve is 60 feet.

5.1-4 CURVE WIDENING

Minimum extra widening on the inside of curves shall be:

5 feet extra	80 to 100 foot radius curve
7 feet extra	60 to 80 foot radius curve

Curve widening, where required, shall be added to the inside of curves.

5.1-7 CONSTRUCTION TOLERANCES

Roads shall be constructed to the dimensions shown on the TYPICAL SECTION SHEET, within the tolerance listed below. Tolerance classes for each road are listed on the TYPICAL SECTION SHEET.

Tolerance Class	A	B	C
Road Width (feet)	+1.5	+1.5	+2.0
Subgrade elevation (feet +/-)	0.5	1.0	2.0
Centerline alignment (feet lt./rt.)	1.0	1.5	3.0

5.1-8 CUT SLOPE RATIO

Excavation (cut) slopes shall be constructed no steeper than shown on the following:

<u>Material Type</u>	<u>Excavation Slope Ratio</u>	<u>Percent</u>
Common Earth (on side slopes less than 55%).....	1:1	100
Common Earth (55% to 70% sideslopes) .....	¾:1	133
Common Earth (on slopes over 70%) .....	½:1	200
Fractured or loose rock .....	½:1	200
Hardpan or solid rock.....	¼:1	400

5.1-9 SHAPING CUT SLOPE

Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

5.1-11 FILL SLOPE RATIO

Embankment (fill) slopes shall be constructed no steeper than shown on the following table:

<u>Material Type</u>	<u>Embankment Slope Ratio</u>	<u>Percent</u>
Common Earth and Rounded Gravel .....	1½:1	67
Angular Rock .....	1¼:1	80
Sandy Soils. ....	2:1	50

5.1-12 DISPOSAL OF ORGANIC DEBRIS

Organic material shall be excluded from embankment.

5.1-22 PROHIBITED DISPOSAL AREAS

Waste material shall not be deposited within 100 feet of a culvert installation, live stream, Riparian Management Zone, wetland or Wetland Management Zone.

5.1-25 TURNAROUNDS

Turnarounds shall be no larger than 30 feet long and 30 feet wide. Location shall be subject to written approval of the Contract Administrator.

5.3-1 FILL COMPACTION

All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over entire width of the lifts. Side hill embankments too narrow to accommodate excavation equipment may be placed by end-dumping or side casting until sufficiently wide to support the equipment.

5.4-3 SEEDING AND FERTILIZING CONSTRUCTION SLOPES

On the following road, Purchaser shall seed and fertilize cut and fill slopes. Application rate shall be 50 pounds seed per acre and 200 pounds fertilizer per acre. Seed and fertilizer will be provided by the Purchaser.

<u>Road</u>	<u>Seed Specification</u>	<u>Fertilizer Specification</u>	<u>Stations</u>
Hurd Connect	Pasture Mix	16-16-16	0+00 to 6+65

5.5-4 SUBGRADE COMPACTION

On the following road constructed subgrades shall be compacted full width except ditch prior to rock application. Compaction shall be by a smooth-drum vibratory roller weighing at least 12,000 pounds. Three complete passes shall be made at a maximum operating speed of 3 mph.

<u>Road</u>	<u>Stations</u>
Hurd Connect	0+00 to 6+65

5.5-5 SUBGRADE CROWN

Finished subgrade shall be crowned as shown on the TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

SECTION 6 - DRAINAGE

6.1-2 BERM REMOVAL

Berms shall be removed from shoulders to permit escape of runoff.

6.2.1-1 CULVERT MATERIAL SPECIFICATION

Purchaser shall furnish, install, and maintain corrugated polyethylene pipe (AASHTO specification No. M-294-S) as designated on the CULVERT LIST. Culvert and flume lengths shall be varied to fit as-built conditions subject to written approval by the Contract Administrator.

6.2.1-2 CULVERT BANDS

Manufacturer's approved connectors shall be used for corrugated polyethylene pipe.

6.2.1-5 REQUIRED CULVERTS STATE PROPERTY

On required roads: culverts, downspouts, flumes, bands, and gaskets as listed on the CULVERT LIST which are not installed shall become property of the State.

6.2.2.1-1 CULVERT SPECIFICATIONS

Culvert, downspout, flume, and energy dissipator installation shall be in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL.

6.2.2.3-1 CROSS DRAIN SKEW

Cross drains and surface culverts on road grades in excess of 3% shall be skewed at least 30 degrees from perpendicular to the road centerline, except that cross drain culverts at the low points of dips in roads shall not be skewed.

6.2.2.3-2 CULVERT SLOPE

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3% nor more than 10%.

6.2.2.5-1 ENERGY DISSIPATORS

Drainage structure outfalls shall not terminate directly on unprotected soil that will erode. Downspouts, flumes, and energy dissipators shall be installed to prevent erosion.

6.3-1 DITCH CONSTRUCTION

Ditches shall be constructed concurrently with construction of the subgrade. Ditches shall drain to culverts, ditchouts, and natural drainages.

6.4-1 CATCH BASINS

Catch basins shall be constructed to resist erosion in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL. Minimum dimensions: two feet wide and four feet long with backslopes consistent with Clause 5.1-8: Excavation Slopes.

6.5-1 HEADWALLS

Headwalls shall be constructed in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL at all cross drain culverts.

SECTION 7 - ROCK

7.1-1 ROCK SOURCES

Rock for construction under this contract may be obtained from a source on State land as listed below at no charge to the Purchaser. Development and use shall be in accordance with a written "Development Plan" prepared by the State. Upon completion of operations, the rock source shall be left in the condition specified in said plan, subject to approval by the Contract Administrator. Use of material from any other source must have prior written approval from the Contract Administrator. If other operators are using or desire to use this rock source, a joint operating plan shall be developed. All parties shall follow this plan.

<u>Source</u>	<u>Location</u>	<u>Type</u>
Sand Hill Pit	NE NW Sec 24 T23N R02W	Pit Run

7.1-1C COMMERCIAL SOURCE

Rock for construction under this contract may be obtained from any commercial source as approved in writing by the Contract Administrator.

<u>Type</u>
Pit Run
2½ Inch Minus Crushed Rock

7.1-4 APPROVED ROCK SOURCES

All non-commercial pit operations shall be conducted as directed by the Contract Administrator.

7.2.1.2-2 DEBRIS IN ROCK

Manufactured or Pit run rock shall contain no more than 5 percent by weight of vegetative debris, dirt, or trash.

7.2.1-2  
2½ INCH MINUS CRUSHED rock shall meet the requirements of the Washington State Department of Transportation 1996 Standard Specifications for Road, Bridge, and Municipal Construction, Section 9-03.9(1), (Aggregates for Ballast and Crushed Surfacing-Ballast).

7.2.1.1-5  
2½ INCH MINUS CRUSHED ROCK

% passing 2½" square sieve.....	100%
% passing 2" square sieve.....	65 -100%
% passing 1" square sieve.....	50 - 70%
% passing ¾" square sieve.....	30 - 50%
% passing U.S. #40 sieve.....	16% Max
% passing U.S. #200 sieve.....	5% Max

All percentages are by weight.  
The portion of ballast retained on ¼ inch sieve shall not contain more than 0.1 percent vegetative debris or trash.

7.4.2-1 **MINIMUM ROCK**  
Apply at least the minimum required rock quantity as shown on ROCK LIST. Required and optional rock shall meet the specifications on the ROCK LIST.

7.4.2-2 **SUBGRADE APPROVAL FOR ROCK**  
Subgrade shall be approved, in writing, by the Contract Administrator prior to application of rock.

7.4.2-3A **SHAPING EXISTING SURFACE**  
On the following road a grader shall be used to shape the existing surface prior to the application of rock.

<u>Road</u>	<u>Stations</u>
Hurd	58+08 to 73+92
Hurd	110+88 to 137+28

7.4.2-3C **GRADING**  
On the following road, a grader shall be used to shape the existing surface prior to timber haul.

<u>Road</u>	<u>Stations</u>
Hurd	0+00 to 58+08
Hurd	73+92 to 110+88
Hurd	137+28 to 184+80

7.4.2-7 **ROCK FOR WIDENING**  
Turnarounds, Turnouts, and curve widening shall have rock applied to the same depth and specifications as the traveled way.

7.4.2-8 **ROCK SHAPING**  
Each lift of rock shall be crowned as shown on TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

7.4.2-9 **SPOT ROCK**  
On the following road, Purchaser shall apply rock as directed by the Contract Administrator in accordance with quantities shown on ROCK LIST.

<u>Road</u>	<u>Stations</u>
Hurd	58+08 to 73+92
Hurd	110+88 to 137+28

7.4.3-2 ROCK COMPACTION

On the following roads, rock shall be spread and compacted full width in lifts each not to exceed 12 inches uncompacted depth. Compaction shall be by smooth drum vibratory roller weighing at least 12,000 pounds. Three complete passes at a maximum speed of 3 mph shall be made on each lift.

<u>Road</u>	<u>Stations</u>
Hurd Connect	0+00 to 6+65
Hurd	58+08 to 73+92
Hurd	110+88 to 137+28

SECTION 8 - STRUCTURES

8.1-1 SIGNS

The Purchaser shall be responsible for the purchase and installation of the following road signs.

<u>Road</u>	<u>Station</u>	<u>Sign</u>
Hurd	As Directed by Contract Administrator	(2)Caution Truck Traffic or Caution Logging

8.4-7 STEEL GATE

On the following road, Purchaser shall install a 16 foot wide steel gate, provided by the State to be picked up at the Mission Creek workspace. Each post shall be set in a minimum of 2.5 cubic yards of poured-in-place concrete. The gate shall be installed with a post and locking device to allow gate to be locked in an open position, as approved by the Contract Administrator.

<u>Road</u>	<u>Stations</u>
Hurd Connect	5+55

8.4-8 GATE CLOSURE

Gates shall be closed and locked when no operation is in progress.

SECTION 9 - ROAD AND LANDING DEACTIVATION

9.2-1 LANDING DEBRIS

Purchaser shall reduce or relocate debris generated by road and landing construction, in a manner approved, in writing, by the Contract Administrator, to avoid landing failures and potential debris slides.

9.2-2 LANDING DRAINAGE

Purchaser shall provide for drainage of the landing surface as approved by the Contract Administrator.

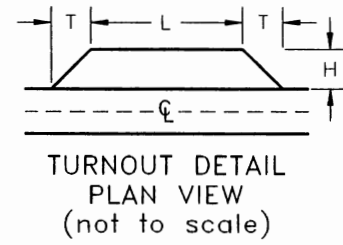


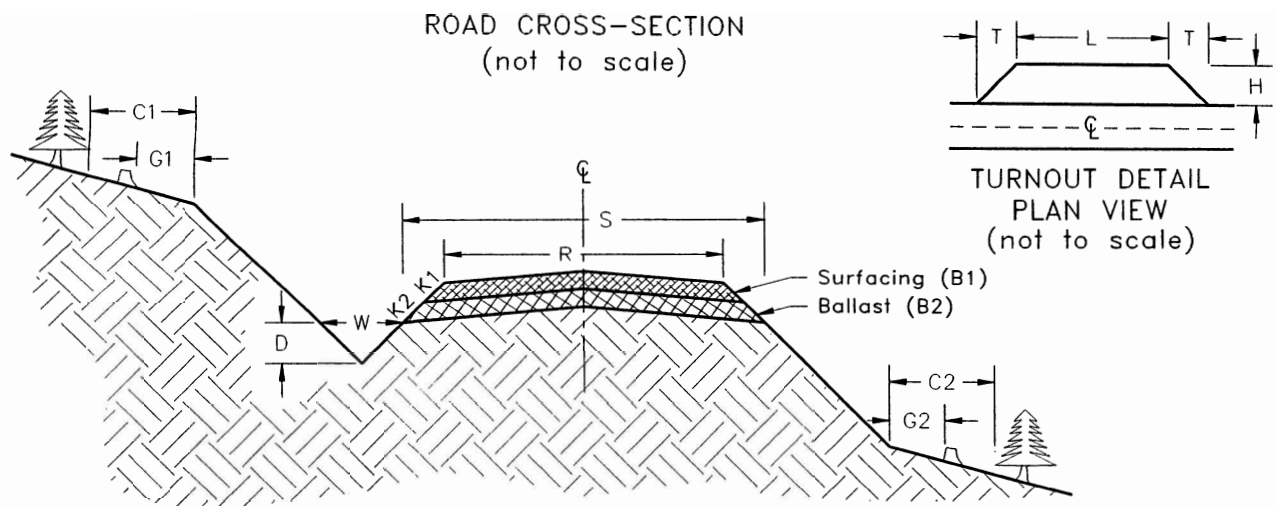
#### 10.1-1A LIGHT ABANDONMENT

Light Abandonment shall consist of:

- constructing non-drivable water bars in conformance with the attached NON-DRIVABLE WATER BAR DETAIL at a maximum spacing which will produce a vertical drop of no more than 10 feet between water bars or between natural drainage paths and with a maximum spacing of 100 feet;
- skewing water bars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3% grade;
- keying water bars into ditchline;
- grass seeding concurrently with abandonment and in accordance with Clause: 5.4-3;
- scattering stumps and slash over the road prism;
- all work shall be completed as directed by the Contract Administrator.

ROAD CROSS-SECTION  
(not to scale)

Page 10 of 23



## ROCK LIST

### BALLAST

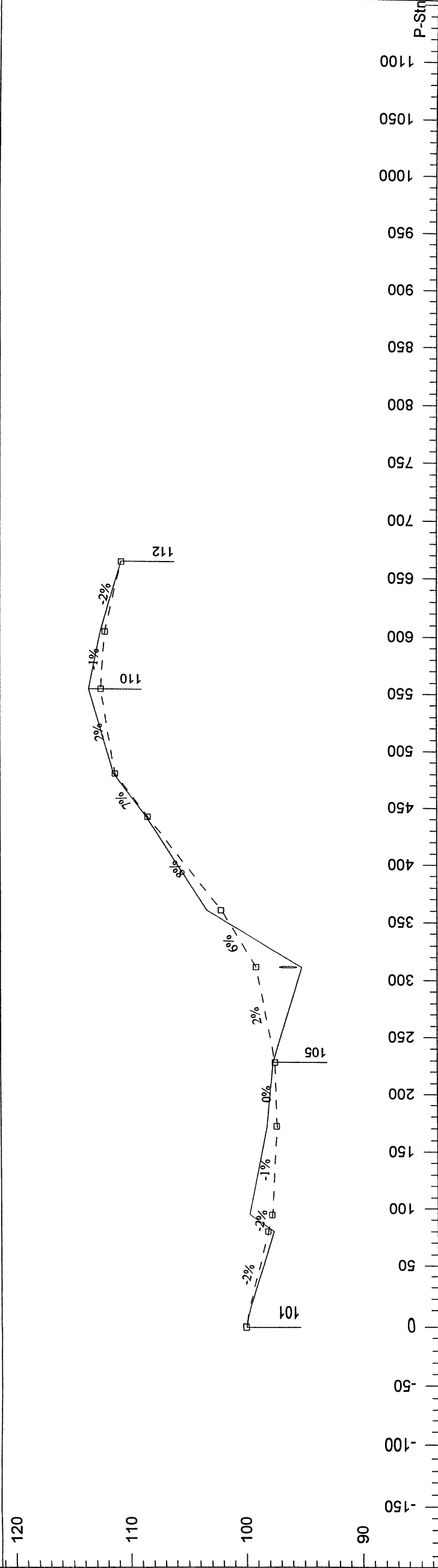
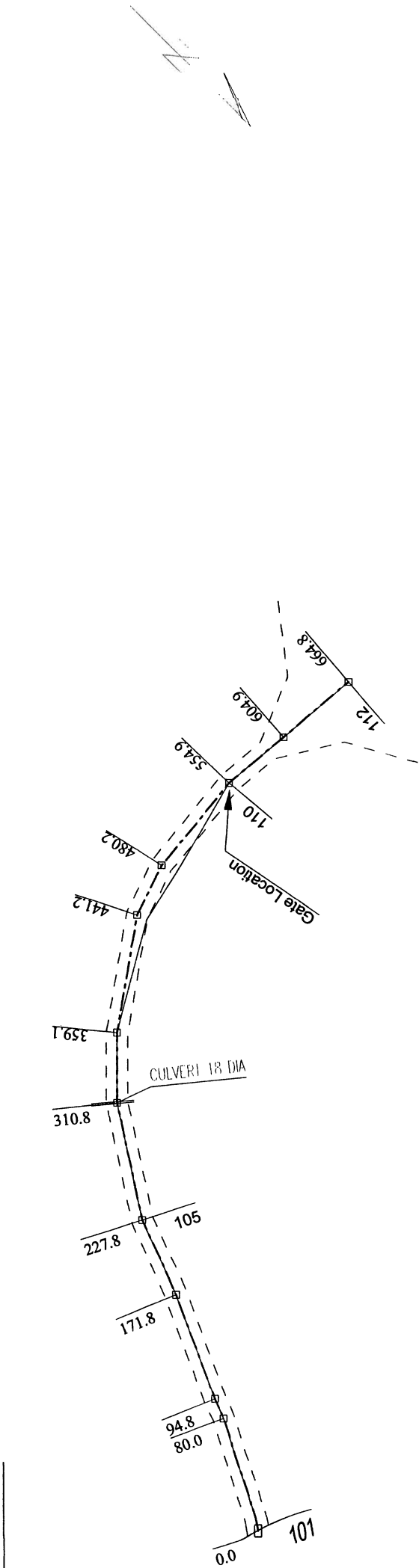
Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth	C.Y./ Station	# of Stations	C.Y. Subtotal	Rock Source
			K2	B2	2½" Minus Crushed Rock			
Hurd	58+08	73+92	1½:1	6"	35	15.84	554	Commercial Source
Hurd	110+88	137+28	1½:1	6"	35	26.4	924	Commercial Source
					Pit Run			
Hurd Connect	0+00	6+65	2:1	12"	52	6.65	346	Sand Hill Pit
*Spur 1	0+00	3+05	2:1	8"	30	3.05	92	Sand Hill Pit
*Spur 2	0+00	6+50	2:1	8"	30	6.50	195	Sand Hill Pit
*Spur 3	0+00	2+01	2:1	8"	30	2.01	60	Sand Hill Pit
*Spur 4	0+00	3+80	2:1	8"	30	3.80	114	Sand Hill Pit
*Spur 5	0+00	1+36	2:1	8"	30	1.36	41	Sand Hill Pit

*Optional Rock

OPTIONAL ROCK 502 Cubic Yards  
 REQUIRED ROCK 1824 Cubic Yards  
 BALLAST TOTAL 2326 Cubic Yards

*Optional Rock: If Purchaser elects to haul on optional rock roads in wet weather, the depth listed above is recommended but not required.

NOTE: Yardages are estimated on a compacted (In-Place) basis. Compliance of required rock will be based on compacted depth measurement.

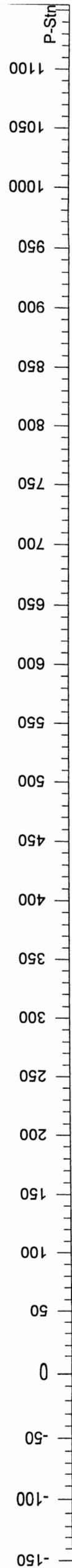
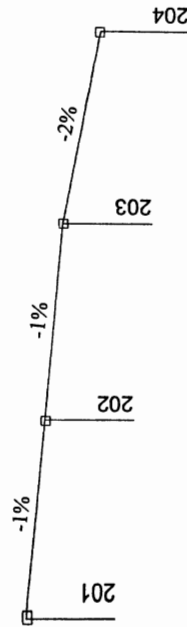
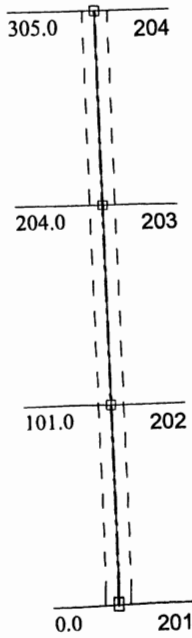


Engineer: B. Heymann  
04/10/21

Plan Scale 1:1200  
Profile Vert Scale 1:120  
Profile Horz Scale 1:1200

Washington State Department of Natural Resources  
South Puget Sound Region

Shoo Timber Sale  
Hurd Connect  
Contract #: 30-075789

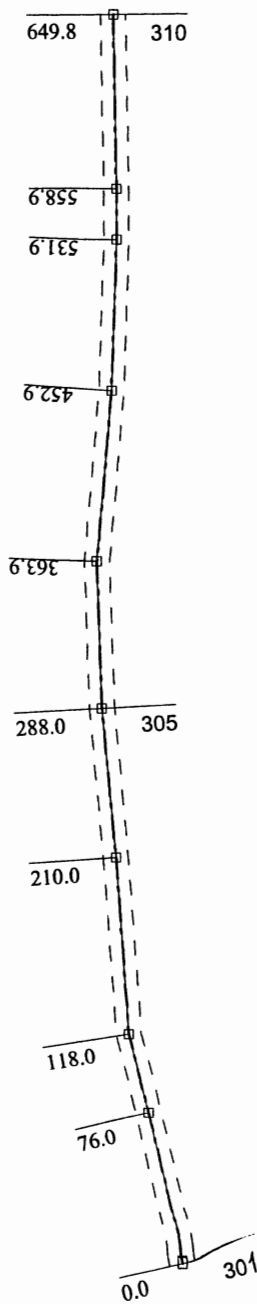
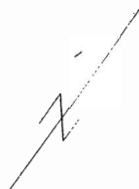


Engineer: B. Heymann  
04/10/21

Plan Scale 1:1200  
Profile Vert Scale 1:120  
Profile Horz Scale 1:1200

Washington State Department of Natural Resources  
South Puget Sound Region

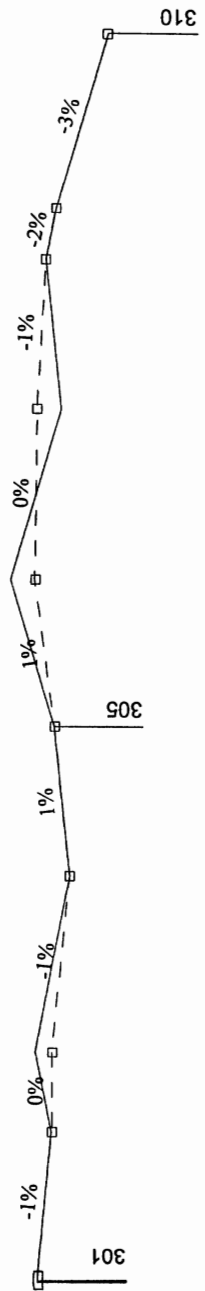
Shoo Timber Sale  
Spur 1  
Contract #: 30-075789



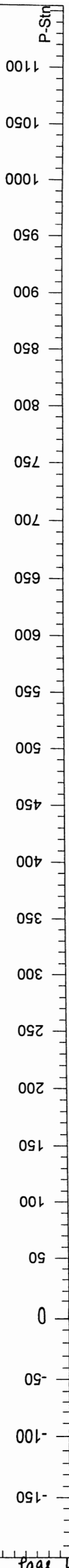
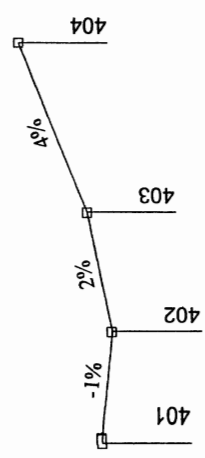
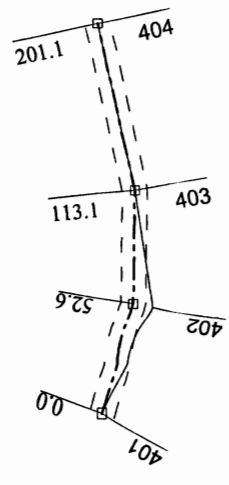
110

100

90



2

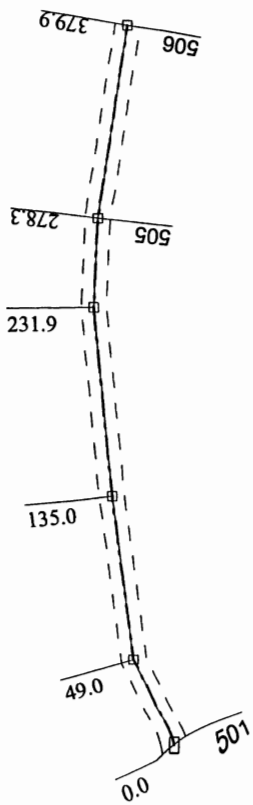


Engineer: B. Heymann  
04/10/21  
Page 1 of 1

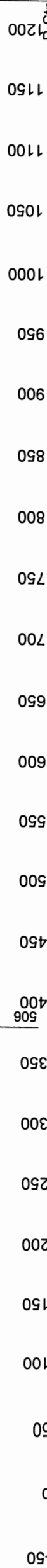
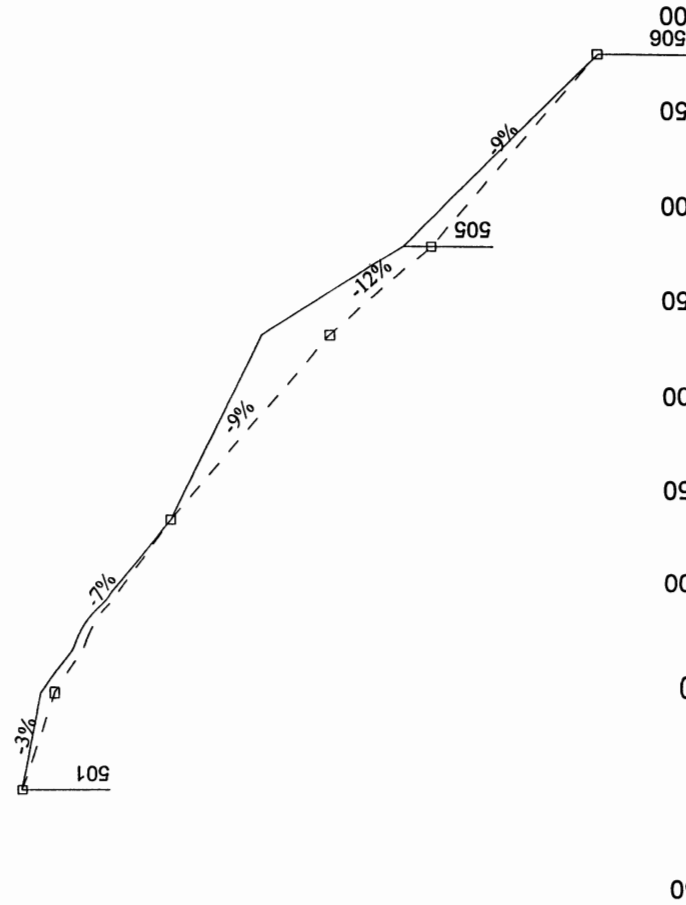
Plan Scale 1:1200  
Profile Vert Scale 1:120  
Profile Horz Scale 1:1200

Washington State Department of Natural Resources  
South Puget Sound Region

Shoo Timber Sale  
Spur 3  
Contract #: 30-075789



100  
90  
80  
70



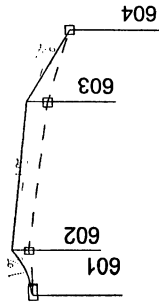
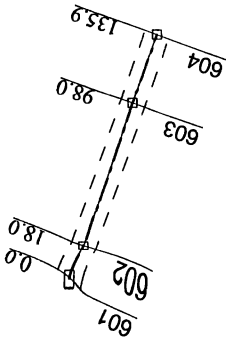
Shoo Timber Sale  
Spur 4  
Contract #: 30-075789

Washington State Department of Natural Resources  
South Puget Sound Region

Plan Scale 1:1200  
Profile Vert Scale 1:120  
Profile Horz Scale 1:1200

Engineer: B. Heymann  
04/10/21  
Page 1 of 1





90

100

110

-150

-100

-50

0

50

100

150

200

250

300

350

400

450

500

550

600

650

700

750

800

850

900

950

1000

1050

1100

P-Station

Shoo Timber Sale  
Spur 5  
Contract #: 30-075789

Washington State Department of Natural Resources  
South Puget Sound Region

Plan Scale 1:1200

Profile Vert Scale 1:120

Profile Horz Scale 1:1200

Engineer: B. Heymann

Page 1 of 1

04/10/21

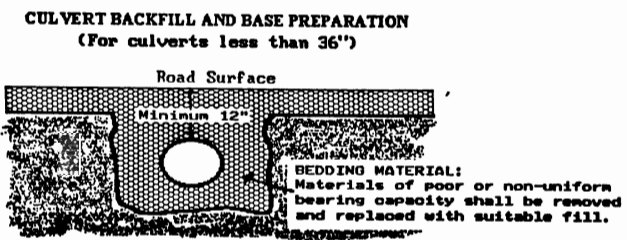
CULVERT LIST

Road Number	Location	Culvert		Length (ft)			Riprap (C.Y.)			Remarks
		Dia.	Type	Culvert	Downspt	Flume	Inlet	Outlet	Type	
Hurd Connect	3+11	18	PD	30						

- PD = Polyethylene Pipe Dual Wall AASHTO No. M294 Type S
- GS16 = Galvanized Steel AASHTO No. M36, 16 Gauge
- AS12 = Aluminized Steel AASHTO No. M274, 12 Gauge
- TEMP = Temporary Culvert

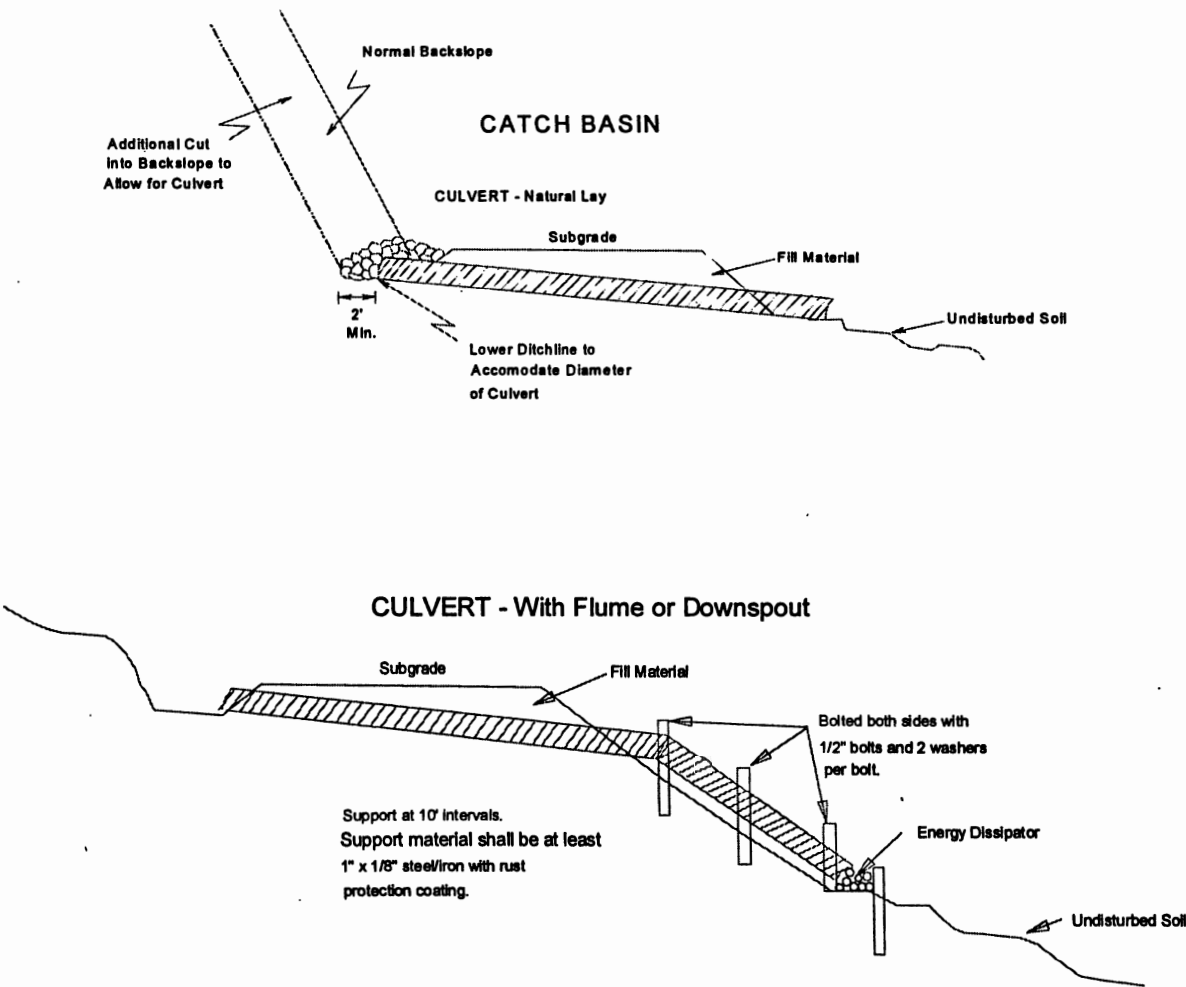
Key:

- QS - Quarry Spalls
- SR - Shot Rock
- NT - Native (bank run)
- SL - Select Fill
- HL - Heavy Loose Riprap
- LL - Light Loose Riprap
- Flume - Half round pipe
- Downspout - Full round pipe

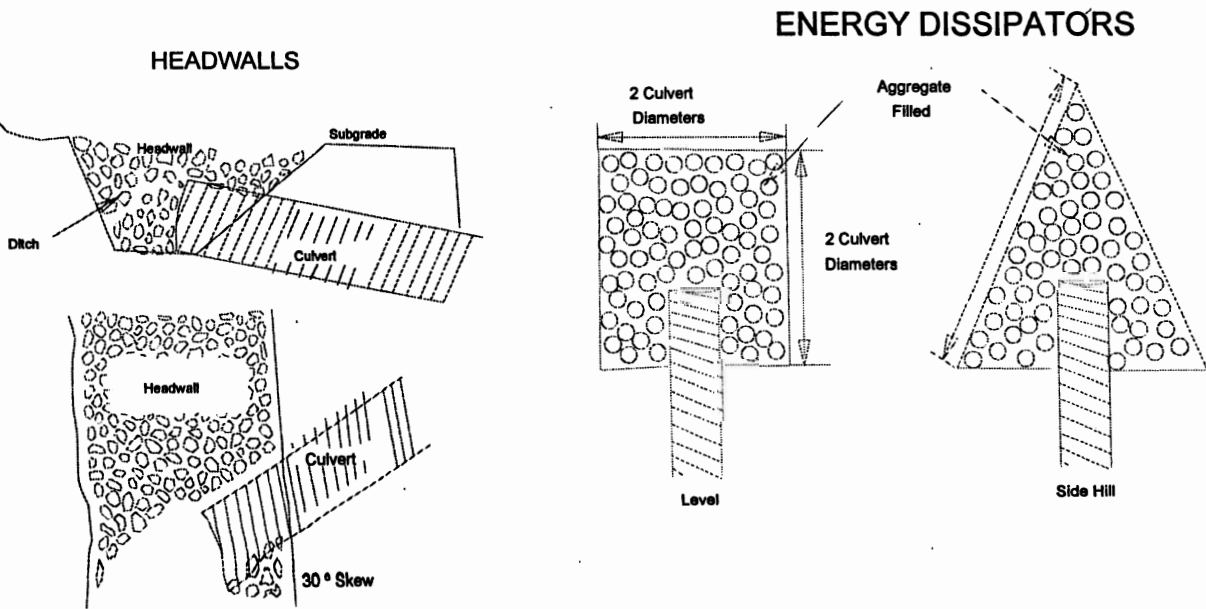


CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 1 of 2)



Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipe. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.



Headwalls to be constructed of material that will resist erosion.

Dissipator Specifications:  
Depth: 1 culvert diameter  
Aggregate: as specified in the CULVERT LIST.

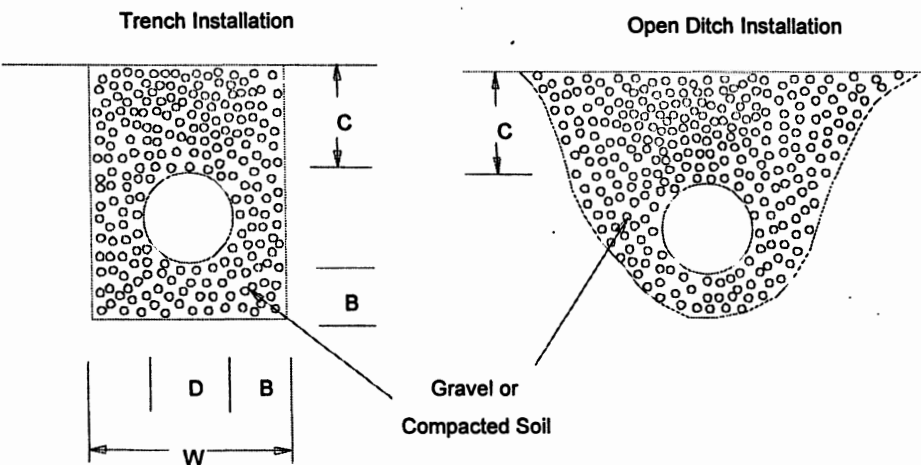
CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 2 of 2)

POLYETHYLENE PIPE INSTALLATION

INSTALLATION REQUIREMENTS:

- 1. Crushed stone, gravel, or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed 1/6 pipe diameter or 4" diameter, whichever is smaller.
- 2. The corrugated pipe shall be laid on grade, on a layer of bedding material as shown for the two types of installations. If native soil is used as the bedding and backfill material, it shall be well compacted in six inch layers under the haunches, around the sides and above the pipe to the recommended minimum height of cover.
- 3. Either crushed aggregate or flexible (asphalt) pavement may be laid as part of the minimum cover requirements.
- 4. Site conditions and availability of bedding materials often dictate the type of installation method used.
- 5. The load bearing capability of flexible conduits is dependent on the type of backfill material used and the degree of compaction achieved. Crushed stone and gravel backfill materials typically reach a compaction level of 90-95% AASHTO standard density without compaction. When native soils are used as backfill material, a compaction level of 85% is required. This minimum compaction can be achieved by either hand or mechanical tamping.



MINIMUM DIMENSIONS  
Trench or Open Ditch Installation

Nominal Diameter	Minimum Thickness	Minimum Cover	Min. Trench Width
D	B	C	W
18"	6"	12"	36"
24"	6"	12"	42"
30"	6"	12"	48"
36"	6"	12"	54"

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES

FOREST ACCESS ROAD  
MAINTENANCE SPECIFICATIONS

1. CONSTRUCTION AND RECONSTRUCTION (Prior to acceptance to the contract or acceptance on a timber sale).

A. Cuts and Fills

1. Maintain slope lines as constructed. Remove slides from the ditches and roadway. Replace fills to 1 ½ : 1 slopes with selected material or as directed. Remove overhanging material from the cut slopes.
2. Material from slides or other sources requiring removal shall not be deposited in streams or at locations where it will erode into streams or water courses.
3. Undesirable slide materials and debris shall not be mixed into the surface material.

B. Surface

1. Grade and shape the road surface, turnouts, and shoulders to the original crown, inslope or outslope as directed to provide suitable traveled surface and surface water runoff in an even, unconcentrated manner.
2. Blading must not undercut the backslope at the bottom of the ditchline or cut geotextile at centerline.
3. Watering may be required to control dust and to retain fine surface rock.
4. Desirable surface material shall not be bladed off the roadway.
5. Replace surface material lost or worn away.
6. Remove berms except as directed by the State.
7. Barrel spread soft spots to prevent degradation of geotextile.

C. Drainage

1. Keep ditches and drainage channels at outlets and inlets of culverts clear of obstructions and functioning as intended.
2. Inspect and clean culverts at least monthly, with additional inspections during storms and periods of high runoff. This must be done even during periods of inactivity.
3. Add stable material at the outlet end of the culvert as needed to stabilize the stream bed.
4. Headwalls: maintain to the road shoulder level with material that will resist erosion.
5. Keep silt bearing surface runoff from getting into live streams.

D. Structures

Repair bridges, culverts, cattleguards, fences, and other road structures to the condition required by the construction specifications.

E. Termination of Use or End of Season

Do maintenance work to minimize damage from the elements such as blading to insure correct runoff, ditch, and culvert cleaning and water bars.

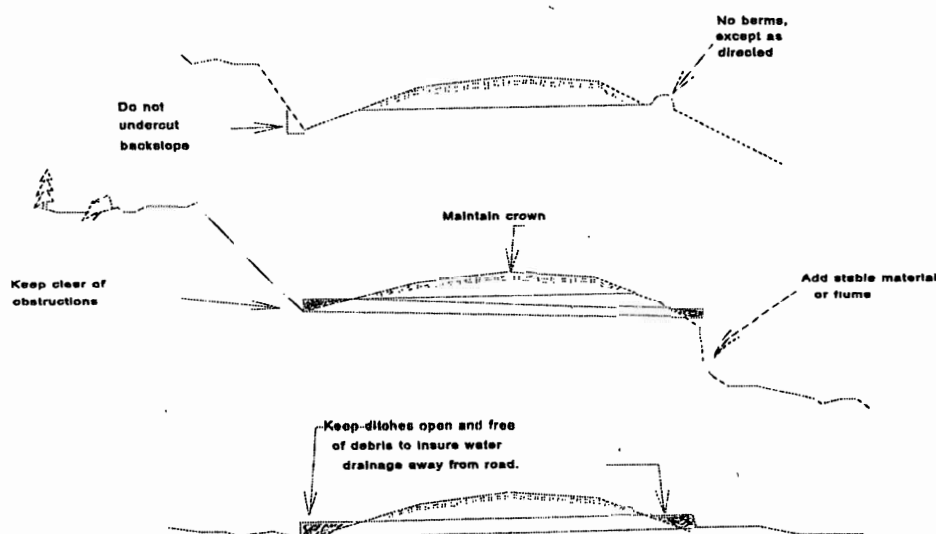
F. Debris

Remove fallen timber, limbs, and stumps from the slopes or roadway.

2. Existing Roads – Timber Sale, Operator Maintained

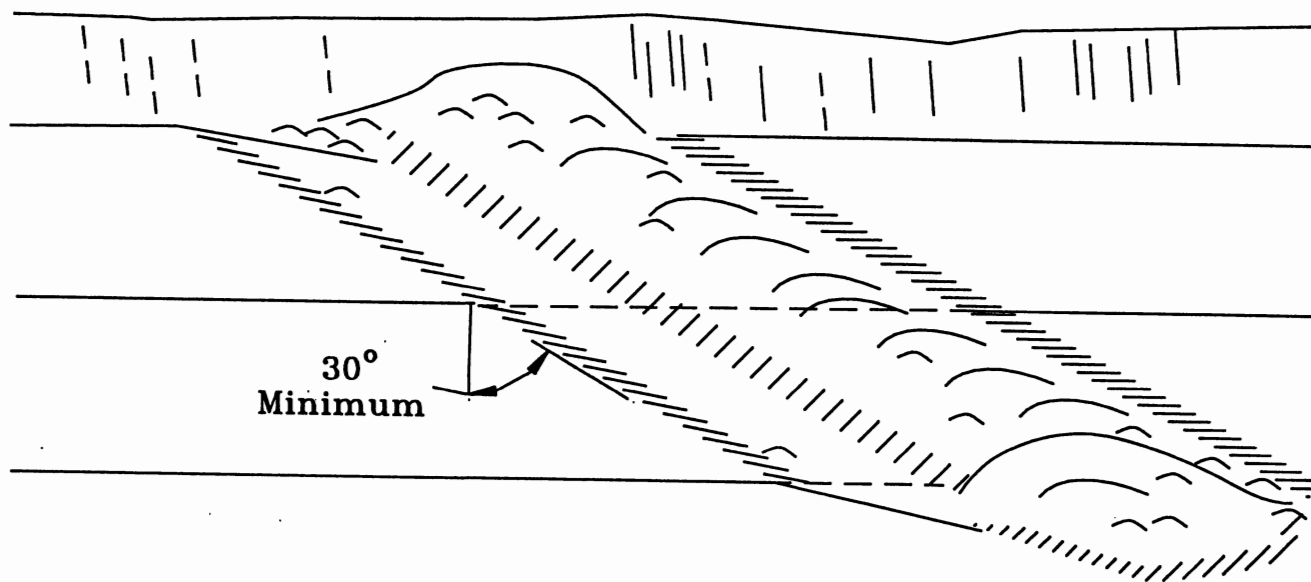
- A. Same as above but not to exceed the condition of the road on the date the contract was signed.

3. A.R.R.F. – Directed maintenance to comply with these specifications.

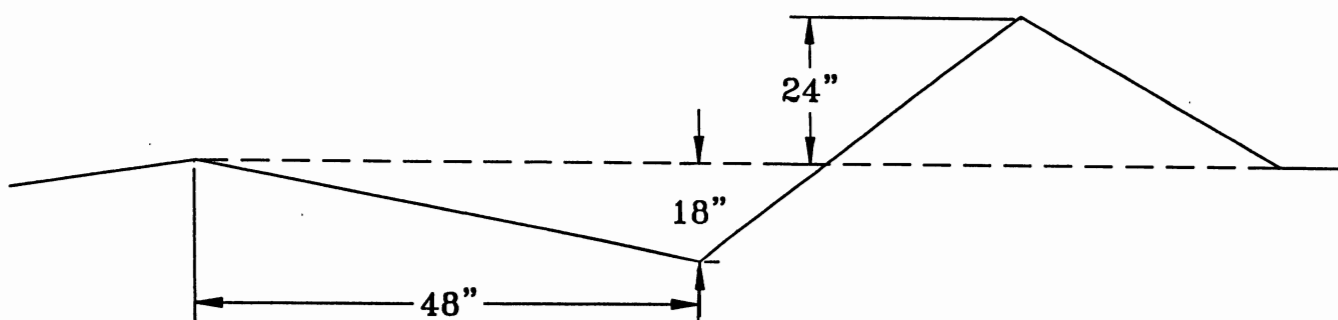


# Non-Driveable Water Bar Detail

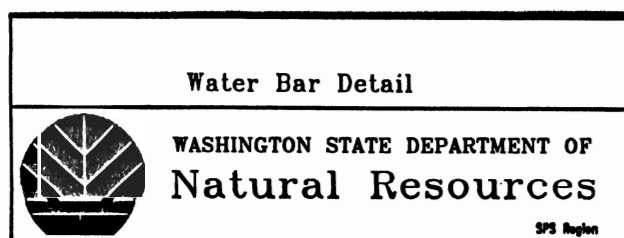
## Cross Ditch



## Cross Section at Centerline



Date:  
Scale : None  
App#  
Drawn by: M.A.D.



Legal Description: NE NW Sec 24 T23N R02W

Rock Pit Name: Sand Hill Pit

PIT DEVELOPMENT AND RECLAMATION PLAN

- 1. Pile debris as directed by the Contract Administrator.
- 2. A minimum stripping width of 10 feet must be maintained from all pit faces and at the termination of operations pit shall be left in said condition.
- 3. Pile all reject rock and overburden away from pit working area directed by the Contract Administrator.
- 4. Pit floor shall be sloped to allow drainage. No ponding will be allowed.
- 5. Maximum face height will be no greater than what can be reached by the excavating equipment.
- 6. At the termination of use the pit face shall have a maximum backslope of 1½:1.
- 7. Quantity and Quality of ballast pit is not guaranteed by the State.

Application No. 30-075789      County: MASON  
NW1/4 NE1/4 NE1/4 NW1/4 SEC 24 TOWNSHIP 23 NORTH, RANGE 2 WEST

